

Mechanical Engineering Department
U. S. Naval Academy
Annapolis, MD

From: Course Coordinator, EM211
To: Midshipmen Enrolled in EM211
Subj.: Course Objectives and Policies

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1. Introduction Mechanics is the branch of physical science that deals with the state of rest or motion of particles and bodies that are subjected to forces. The origins of mechanics can be traced back at least to Archimedes (287-212 B.C.) who developed lever laws and calculated a value of pi. The portion of mechanics covered in EM211 deals with particles and bodies at rest; i.e., in a static condition, or at least not accelerating.

2. Course Content This course is primarily a problem-solving course. Most of the material covered in the course relates to the equilibrium state of rigid bodies subjected to forces and moments. Topics covered include:

- Problem solving techniques
- Concurrent force systems and equilibrium
- Forces, moments, couples and resultants
- Coulomb friction
- Centers of gravity and centroids
- Area moments of inertia

3. Course Objectives In addition to studying the topics listed above, students will be required to apply a certain method when solving problems in this course. The engineering problem solution method will be emphasized throughout the course. To help you develop this methodology, a prescribed problem solution format will be followed and is **required** for all homework in the course. The six elements of the format are:

- Given
- Find
- System sketch or free body diagram
- Mechanics and/or mathematical relationships
- Solution
- Answer enclosed in a box

The system sketches and free body diagrams will be particularly emphasized. An effort will be made to insure that you will develop the skill utilized by almost all engineers of being able to clearly sketch the system being studied. These sketches should be neatly drawn using straight edges and circle templates. The assignment sheet that you will be given lists the reading assignments and homework problems to be done. It is expected that for every hour in class, the average student will spend at least two hours outside of class studying the text and doing homework. Students are responsible for all assigned homework material as well

as classroom matters missed due to absences.

4. Course Requirements Each student is expected to have the following materials:

Mechanical Engineering Solution pad (Mid Store)
Notebook for class notes, handouts, HW solutions, tests and quizzes
Straight edge and circle template
Calculator
Soft lead pencils for all HW and tests

5. Homework It is expected that all homework problems will be completed by each student. However, it is not expected that a student will spend an inordinately long time on any one problem without making progress. If, after working on a problem, you are unable to make any progress, it is acceptable and *encouraged* for you to discuss the problem with someone else. You may not, however, copy another person's work and submit it as yours! The solution of problems on your own is necessary for you to properly learn the concepts presented.

6. Experimental Instruction Approximately 100 midshipmen in EM211 are participating in a pedagogical experiment to see what effect an extra class period each week can have on success in Statics. About half of the students with specified indicators of success in Statics are in sections with an extra class period each week. The Mechanical Engineering Department appreciates the cooperation of all involved.

7. Extra Instruction Your instructor will advise you of his/her E.I. policy. There will be scheduled evening group E.I. sessions in the week before each of the four scheduled test. These will be announced both by your instructor and by e-mail.

8. Grading There will be four fifty-minute tests and perhaps a number of short quizzes. If you expect to be absent for an announced quiz or test, it is up to you to notify your instructor as far in advance as possible to arrange a make-up. Course grades will be determined as follows:

Tests and quizzes	50%
Homework/class participation	15%
Final examination	35%

9. Calculators All problems in this course may be solved using a calculator. The exchanging or sharing of calculators during any test, quiz or examination is prohibited. Laptop computers may not be used during tests, quizzes or the final examination.

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